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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,355	09/17/2003	Masumi Suetsugu	2185-0698P	8070
2292	7590	02/08/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			ASHTON, ROSEMARY E	
			ART UNIT	PAPER NUMBER

1752

DATE MAILED: 02/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/664,355

Applicant(s)

SUETSUGU ET AL.

Examiner

Rosemary E. Ashton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,5,7 and 9-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,9-11 and 13 is/are rejected.
- 7) ☒ Claim(s) 7 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/559,646.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8/10/05.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,2,5,9-11,13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urano et al. patent no. 5,695,910 in view of Niki et al patent no. 5,744,281 and Zampini et al. patent no. 6,858,379.

Urano teaches a negative resist composition comprising a polyvinyl phenol based resin in which the phenolic hydroxyl group is partially alkyl etherified, a photo-acid generator (PAG), a crosslinker and it may also have a basic nitrogen compound such as pyridine (col. 12, lines 1-15). Examples of the resin are shown in col. 4 and include the ether groups such as ethoxyethoxystyrene, methoxyethoxystyrene and isopropoxy-ethoxystyrene.

Urano does not teach the composition contains the dipyridyl compounds claimed.

Niki teaches a photoresist composition comprising a resin, PAG and a basic nitrogen compound. The preferred nitrogen compound is a pyridine compound such as 1,2-bis(4-pyridyl)ethane, and 1,2-bis(2-pyridyl)ethylene. These compounds meet the

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limitations of A in formula 1 in claim 1 when A is a bivalent hydrocarbon residue of an ethane (-CH<sub>2</sub>-CH<sub>2</sub>-) and an ethylene (-CH=CH-).

It would have been obvious to one of ordinary skill in the art to use bis(4-pyridyl)ethane or 1,2-bis(2-pyridyl)ethylene as the basic nitrogen compounds in the invention of Urano because, as taught in col. 2, lines 39-45 of Zampini, a basic additive can enhance resolution of an image pattern formed with the resist, particularly by inhibiting undesired diffusion of photogenerated acid into unexposed resist layer regions.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Urano et al. patent no. 5,695,910 in view of Niki et al patent no. 5,744,281 and Zampini et al. patent no. 6,858,379 as applied to claim 1 above, and further in view of Huang et al. patent no. 5,712,078 and Renner patent no. 4,371,605.

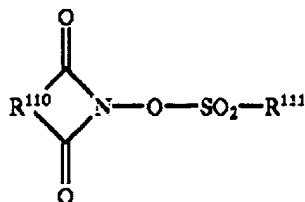
In col. 8 and 9 Urano teaches the resist composition comprises a PAG selected from the group consisting of disulfones, sulfonyl-alpha-keto-diazomethanes, triarylsulfonium and nitrobenzyl compounds.

It does not teach the PAG is a sulfonic ester of an N-hydroxyimide compound.

An N-hydroxyimide is shown below.

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(v) Sulfonic Acid Esters of N-hydroxyimide Compounds of Formula (P5)



From col.27 of Pat.no. 6,916,592 1

In col. 7 Huang teaches PAG compounds for photoresist compositions wherein the PAG compounds are selected from the group consisting of metallic, metalloid, and non-metallic onium salts of which examples are described in U.S. Pat. No. 4,102,687, aryl sulfonates including without limitation, tris-pyrogallol sulfonates and anthracene-2-sulfonates such as 9,10-diethylantracene-2-sulfonate, 2-nitrobenzyl esters, beta-ketosulfones, disulfones, arylsulfonyl-alpha-keto- and alpha-carboxyl-diazomethanes, and precursors of substituted and unsubstituted sulfonic acids, including, without limitation, oxime sulfonates as described in EP 0 361 907 to Hoechst Celanese Corporation, and in the publication of Shirai, et al., "Synthesis and Photo-Induced Dissolution of Polymers Bearing Imino Sulfonate Groups," J. Polym. Sci. A, 27, 325 (1989), and N-hydroxyimides of the type described in U.S. Pat. No. 4,371,605. Huang exemplifies exposure at 248 nm using a triphenylsulfonium salt in example 15.

U.S. Pat. No. 4,371,605, cited in Huang, is to Renner and teaches photopolymerizable compositions have a PAG containing sulfonic acid esters of N-

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hydroxyamides and N-hydroxyimides as photoinitiators (col. 1) as claimed in claim 9 of the instant application.

It would have been obvious to one of ordinary skill in the art to use a sulfonic acid ester of N-hydroxyimides as a PAG in the invention of Urano with a reasonable expectation of obtaining a pattern upon exposure to 248 nm because Huang equates the sulfonic acid ester of N-hydroxyimides with the PAG's taught in Urano, such as onium salts, disulfones, arylsulfonyl-alpha-keto-diazomethane and nitrobenzyl compounds and both Urano (Ex.1, col. 23) and Huang (Ex.15, col. 17) use 248 nm light for successful image formation.

#### ***Allowable Subject Matter***

4. Claims 7,12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach a negative resist composition having a dipyridylsulfide or dipyridyldisulfide compound.

#### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosemary E. Ashton whose telephone number is 571-272-1326. The examiner can normally be reached on Mon-Fri, 11:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the

Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rosemary E. Ashton  
Primary Examiner  
Art Unit 1752

February 2, 2006

rea

ROSEMARY ASHTON  
PRIMARY EXAMINER